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**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**



Appl. No. : 10/797,791
Applicant(s) : Thomas DUERBAUM et al.
Filed : 10 March 2004
TC/A.U. : 2838
Examiner : Rajnikant B. PATEL
Atty. Docket : DE-010138A

Title: RESONANT CONVERTER

PRE-APPEAL BRIEF REQUEST FOR REVIEW

U.S. Patent and Trademark Office
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Alexandria, VA 22314

Sir:

In response to the final Office action of 19 May 2005, Applicants request review of the final rejection in the above referenced application. No amendments are being filed with this request. This paper is being filed with a Notice of Appeal.

This review is requested for the reasons stated on the attached sheets.

I. The Examiner Has Omitted One or More Essential Elements Needed for a Prima Facie Rejection of the Following Claims:

Claim 5

Among other things, the resonant converter of claim 5 includes a transformer with a primary winding and at least two secondary windings of different winding directions.

The Office Action fails to allege that the cited prior art discloses a feature wherein the two secondary windings have different winding directions.

The Office Action does not cite anything in Nguyen that discloses such a feature. Moreover, the undersigned attorney believes that such a feature is contrary to FIG. 4 of Nguyen, cited by the Examiner.

Indeed, as best understood by the undersigned attorney, both of the secondary windings 20b and 20c in FIG. 4 of Nguyen have a same winding direction which is opposite to the winding direction of the primary winding 20a. Thus, during the first half cycle when T1 conducts, current flows through winding 20b from the non-dot side of the winding to the dot side of the winding, while current flows in the opposite direction through primary winding 20a - from the dot side of the winding to the non-dot side. Meanwhile, during the second half-cycle when T2 conducts, current flows through winding 20c from the dot side of the winding to the non-dot side of the winding, while, once again, current flows in the opposite direction through primary winding 20a - from the non-dot side of the winding to the dot side. Therefore, it follows since windings 20b and 20c are both wound opposite to the winding direction of the primary winding 20a, they must be wound in the same direction as each other.

The Office Action does not cite anything in Jones or Suzui as allegedly disclosing any such feature, nor does it cite any motivation in either Jones or Suzui for modifying Nguyen to include such a feature.

Furthermore, in the resonant converter of claim 5, the resonant frequency is determined by, among other things, the main and leakage inductances of the transformer.

The Office Action fails to allege that the cited prior art discloses a

feature wherein the resonant frequency is determined by, among other things, the main and leakage inductances of the transformer. The Office Action fails to cite anything in Nguyen, Jones or Suzuji as allegedly disclosing any such feature, nor does it cite any motivation in either Jones or Suzuji for modifying Nguyen to include such a feature. Meanwhile, Nguyen teaches that the resonant frequency of the inverter of FIG. 4 is set by the inductor L and the capacitor C (col. 6, 47-48), not any inductances of the transformer.

Accordingly, for at least these reasons, Applicants respectfully submit that the rejection of claim 5 is defective and should be withdrawn. The rejection of dependent claims 11-13, 17-18 and 25-26 should similarly be withdrawn.

Claim 11

Among other things, the resonant converter of claim 11 includes **means for deriving from each of the multiple outputs a measuring signal for regulating an output voltage of the inverter.** **The Office Action fails to even mention such a feature.** No such feature appears in Nguyen, nor has the Office Action cited anything that would have motivated someone of skill in the art at the time the invention was made to modify Nguyen to include such a feature.

Accordingly, for at least these reasons, Applicants respectfully submit that the rejection of claim 1 is defective and should be withdrawn.

Claims 12 and 13

Among other things, in the resonant converters of claims 12 and 13, at least two of the secondary windings are electrically separated from each other. **The Office Action fails to even mention such a feature.** No such feature appears in Nguyen, not has the Office Action cited anything that would have motivated someone of skill in the art at the time the invention was made to modify Nguyen to include such a feature.

Accordingly, for at least this additional reason, Applicants respectfully submit that claims 12 and 13 are defective and should be withdrawn.

Claim 8

Among other things, in the resonant converter of claim 8, secondary windings of the transformer are connected to the converter outputs by way of one diode and

one output filter each. **The Office Action fails to even mention such a feature.** Indeed, it is very clear from inspection that FIG. 4 of Nguyen, cited in the Office Action, does not include any such feature. The Office Action also fails to cite anything in Nguyen, Lopez or Suzuji as allegedly disclosing any such feature, nor does it cite any motivation in either Lopez or Suzuji for modifying Nguyen to include such a feature.

Accordingly, for at least these reasons, Applicants respectfully submit that the rejection of claim 8 is defective and should be withdrawn. The rejection of dependent claims 15 and 21-22 should be similarly withdrawn.

Claim 15

Among other things, the resonant converter of claim 15 includes means for deriving from each of the multiple outputs a measuring signal for regulating an output voltage of the inverter. **The Office Action fails to even mention such a feature.** No such feature appears in Nguyen, nor has the Office Action cited anything that would have motivated someone of skill in the art at the time the invention was made to modify Nguyen to include such a feature.

Accordingly, for at least these reasons, Applicants respectfully submit that the rejection of claim 15 is defective and should be withdrawn.

Claim 16

Among other things, in the resonant converter of claim 16 at least two of the secondary windings are electrically separated from each other. **The Office Action fails to even mention such a feature.** No such feature appears in Schlecht.

Accordingly, for at least these reasons, Applicants respectfully submit that the rejection of claim 16 is defective and should be withdrawn.

II. The Examiner Has Made Clear Errors in the Rejection of Claim 9.

Among other things, in the resonant converter of claim 9, different ratios of output voltage to number of turns are provided in respect of associated secondary windings having different winding directions.

Schlecht does not disclose any such feature.

The Office Action states that Schlecht discloses "different output ratio," citing

col. 12, line 60 – col. 7, line 5. It is unclear exactly what is meant by this. Schlecht does disclose that the two secondary windings may have different turn ratios with respect to the primary winding. However, the cited text in Schlecht does not disclose that the two secondary windings have different ratios between the output voltage and the number of turns. Indeed, the cited text specifically discloses that if the output voltage of the two secondary windings should be the same (e.g., 12 volts), then the two secondary windings should have the same number of turns. That is, the cited text discloses that the two secondary windings have the same ratios between the output voltage and the number of turns. Meanwhile, the present specification discloses at page 5, lines 1-31 an exemplary embodiment with respect to FIGs. 5-7 where the ratio of the output voltage (V_{out}) to the number of turns (n) - that is V_{out}/N - can be made to be different for the two secondary windings by varying the duty cycle of the AC voltage supplied by the inverter 2.

Accordingly, for at least these reasons, Applicants respectfully submit that the rejection of claim 9 is defective and should be withdrawn. The rejection of dependent claims 16 and 23-24 should be similarly withdrawn.


CONCLUSION

In view of the foregoing explanations, Applicants respectfully request that the prior art rejections of claims 5, 8-9, 11- 13, 15-18 and 21-26 be withdrawn and the application returned to the Examiner for further prosecution.

Respectfully submitted,

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